



Refurbishing Gaulin/APV machines

BOS was founded in 1950, servicing, producing spare parts for and refurbishing Gaulin/ APV machines. This was and still is the core activity of BOS, only in the early 20th century, BOS started to produce its own Homogenisers. As the Gaulin principle is still leading for BOS, it is worthwhile to look into the development of Gaulin machines.

Production Excellence

With decades of technical expertise, we excel in the design, production, and continuous improvement of our product range. Our homogenizers are proudly manufactured in the Netherlands, where craftsmanship & durability are essential. By focusing on this specific niche, we can tailor our services and support to meet the precise needs of our customers across various industries, like dairy, food, pharmaceutical, chemical, and biotech sectors. Our client portfolio includes industry giants such as Nestlé, Lactalis, FrieslandCampina and Shell, reflecting our commitment to quality and reliability.

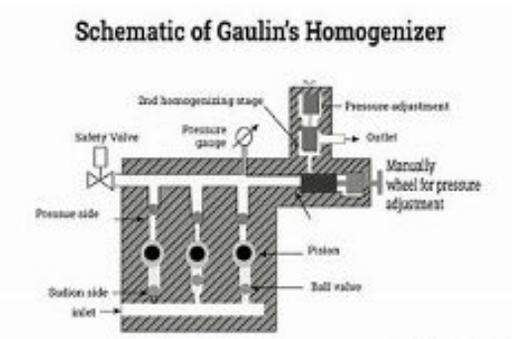
75 years of knowhow and experience

BOS at a glance

- 75 years of experience in homogenisers, high pressure pumps, spare parts and service
- Specialized in parts for Gaulin, SPX-APV & BOS
- HQ & Manufacturing in the Netherlands (EU) and Sales-Office in China
- Worldwide distribution network for supply and providing local service
- Over 15,000 parts on stock
- Complete range of BOS high-pressure homogenisers and pumps

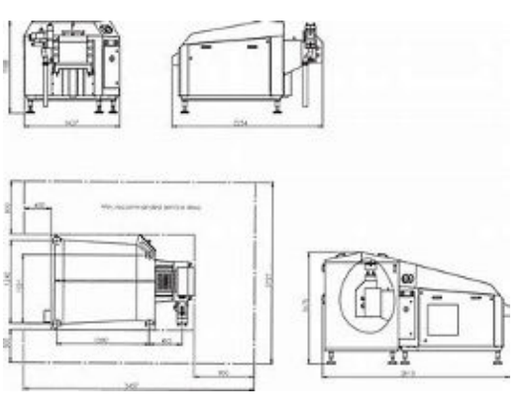
Early developments of the Gaulin machines

After patenting the process in France in 1899, Auguste Gaulin introduced his machine for “treating milk” at the Paris World’s Fair in 1900. The machine consisted of a 3-piston pump designed to push a combined stream of milk and cream through a set of tiny capillary tubes – an early version of a homogenizing valve. While the piston pump and homogenizing valve have changed over the following century, Auguste Gaulin’s basic design remains the simplest and most economical way of creating emulsions from liquids that would normally tend to separate over time.



Auguste Gaulin was awarded a US patent in 1904. Robert Manton Burnett was a Massachusetts businessman and part of a large family of “gentleman dairymen” who had helped popularize many advances in dairy technology. In 1909, he formed a company bearing his middle name to produce the Gaulin Homogenizer -- the Manton-Gaulin Company.

Ice cream manufacturers were the first large-scale commercial customers for Gaulin’s new machine as homogenization of ice cream mix markedly improved the smoothness and creaminess of the product. Oddly enough, it was possibly the Burnett family’s own previous work in popularizing glass milk bottles that hindered acceptance of homogenized bottled milk by the public. Since the introduction of the glass bottle, consumers had become accustomed to seeing the cream floating on top of the milk in the bottle. If the cream wasn’t visible, the milk was assumed to have been “skimmed” of cream and was considered less desirable. It took nearly 30 more years before homogenized milk became the standard for bottling.



In 1924, Manton-Gaulin introduced the 2-stage homogenizing valve. Capillary tubes had given way to a more durable “annular orifice” design constructed from hardened materials. This same basic design is still in use today.



History of the Gaulin machine

The development of the Homogenisers can be described in the following way:

1899	Auguste Gaulin patents his machine for homogenizing milk.
1900	Homogenized milk is displayed at the 1900 World's Fair in Paris.
1900's	The Burnett family becomes involved in the production of dairy machinery.
1909	Robert Manton Burnett founds the Manton-Gaulin Manufacturing Company to produce the Gaulin Homogenizer.
1925	Manton-Gaulin patents a 2-stage homogenizing valve.
1940's	Homogenized Milk begins to gain widespread acceptance with the American consumer.
1950's	Thousands of Gaulin Homogenizers are sold as it becomes a necessary piece of equipment in every milk bottling plant.
1961	Stainless Steel clad frames are introduced and quickly become the norm for food production environments.
1960's	The use of homogenizers spreads beyond the dairy industry to include chemical, lubricants, textiles, and many others.
1972	Gaulin is acquired by APV, a multinational food, brewery, and healthcare equipment supplier. The name 'Manton' is dropped and the machines become known simply as Gaulin homogenizers.
1980's	The need for higher capacity machines leads to the development of the MicroGap valve – a homogenizing valve that homogenizes milk at lower pressures than the 2-stage design.

1980's

Gaulin homogenizers own a near-90% market share due to their solid reputation for long term reliability.

1987

APV purchases Rannie – a Danish homogenizer line – but continues to market the two brands separately.

1990's

The bio-pharmaceutical industry begins to require homogenizing pressures of 10.000 psi and beyond, pushing further technological development.

1997

APV becomes part of Siebe, later known as Invensys plc.

2001

The Gaulin and Rannie brands are merged into a single product line with machines ranging from 5 to 400 hp and pressure ranges up to 20.000 psi.

2008

APV Homogenizer Division (and the rest of APV) Is acquired by SPX FLOW Corporation, a multi-industry manufacturing firm.



Gaulin Models

Gaulin homogenizers have gone through many changes over the century since their inception. Manufacturing dates are approximate.

1 CGD Series (WW II – 1947)

This durable design was popular after WW II. The primary identifying feature is the use of a packing gland at the rear of the homogenizing head to put tension on the plunger packing. While considered obsolete, these machines were so rugged that many have survived into the early 2000's.





2 E Series (1947 – 1952)

The model E was the first to use an internal spring to produce proper tension on the plunger packing. This became the basis for design of the Gaulin Homogenizer for the next 70 years. Consequently, many of these machines are still in operation. However, they lack many features that make later models more serviceable.

3 K and DJ Series (1953 – 1978)

A continuation of the model E, the K and DJ models introduced the use of nylon gaskets instead of paper, leather, or copper. The K was very popular in the US, but also in England - where it remained in production through the late 1970's. As of 2024, repair parts are still readily available for the large, worldwide installed base of K-Series machines.



4 M Series – Painted (1961 – 1998)

A further upgrade of the same E/K/DJ frames introduced further frame upgrades along with improvements to the cylinder block design. The smaller M painted frames remained in production nearly unchanged all the way through 1998. The model M was the first available with Tapered Valve Seats, reducing potential costs & downtime when the suction/discharge valve seats eventually wear out.





5 M and MF Series – Stainless (1961 – 1963)

Later considered a failure, the stainless shrouded M & MF models featured a “short stroke” design which led to crankshaft/bearing failures. (The exception is the model M12 which did not feature the short-stroke design and remained in production through 1998.) The M and MF models were quickly replaced with the more robust MC series in 1963. Many M and MF models remained in use for decades, but were usually only successful when operated at considerably lower speeds.

6 MC Series (1963 – 1998)

The Gaulin MC series is the machine that gave the Gaulin homogenizer its worldwide reputation as a “workhorse”. The solid, dependable power frame combined heavy-duty components with a “Slow-Speed” drive system that resulted in long service life and relatively low maintenance. Stainless steel skins became standard on the larger MC18, MC45, MC75, and MC100 models. MC series machines were also built at an APV-Schroeder facility in Lubeck, Germany in the 1980’s and 1990’s. Tens of thousands of MC machines remain in service to this day.



7 MS Series (1983 – 1998)

Since the MC series design was so durable and successful, the MS series was introduced as more of an upgrade as opposed to a true successor model. While the cylinder block and most of the drive train remained the same, the MS series primarily featured improvements to the serviceability of the power frame. Along with the MS model came the introduction of the MicroGap homogenizing valve, allowing higher volume/lower pressure models to





8 G and R Series (1998 – Present)

In the late 1990's, Gaulin introduced the first major overhaul of their homogenizer design since 1963. While the basic concepts remained the same, the new design employed many improvements and modernizations to the power frame. The new machine series was designed and originally fabricated in Germany, but new machines are currently assembled in the USA. Many of the auxiliary system components have been "Americanized" to help ease future maintenance. The Gaulin and Rannie brands were integrated into a single series using the same power frame. Liquid ends are available in either the Gaulin Monoblock style or Rannie 3-piece design with Gaulin-style machines bearing a "G" designation and Rannie-style machines bearing an "R".

9 T Series (2010 – Present)

In 2010, Gaulin replaced one of the less popular G/R models with the T110 and T125 models. Further changes were made to the power frame design to improve access for maintenance and ease of use.



Examples of refurbished machines by Bos

Bos has refurbished over 50 old Gaulin and Rannie's machines over the years, as Bos is an expert in servicing, producing parts and refurbishment Gaulin and Rannie's. In this brochure, one can find 2 examples:



A > 40 years old MC45

Refurbished in December 2021 at the location of Bos in Hilversum, the Netherlands. The customer was Vreugdenhil, an important International dairy company in the Netherlands. This machine is a Homogeniser in combination with a high pressure pump, feeding a spray dryer, used for drying milk. Bos manufactured and installed a new compression block, a new cylinder block, a new electrical motor, spray painted the base and placed new cladding.



Also > 40 years old MC18

Refurbished in February 2022, also at Bos in Hilversum, the Netherlands. The customer was Kelp Blue, a Dutch company with a (pilot) manufacturing plant in Namibia. Kelp Blue treats kelp or sea weed to produce soil enrichers in a sustainable and organic way. Special of this machine was that it could handle an enormous pressure: up to 10.000 psi/ 700 bar and Bos produced the compression block and the Tungsten Carbide homogenizing valve for this machine.

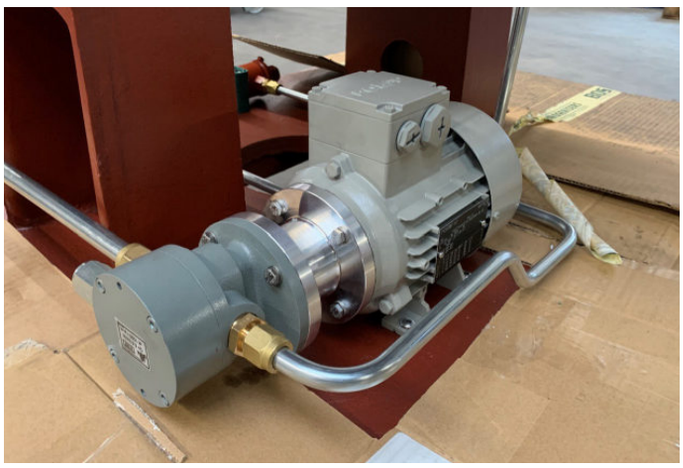
Refurbished: MC45-500B HOMO/HPP

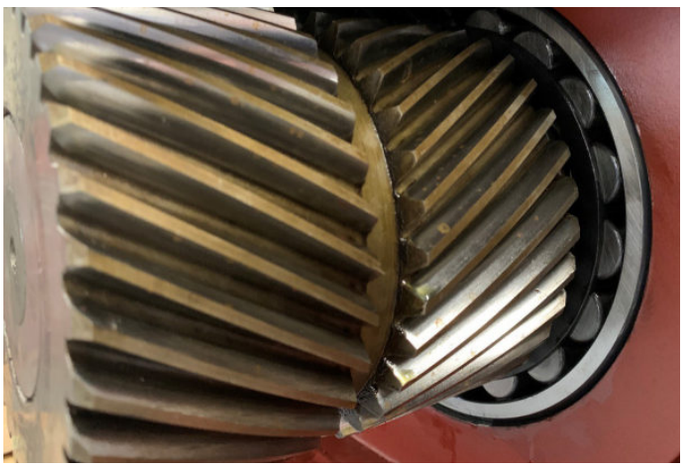


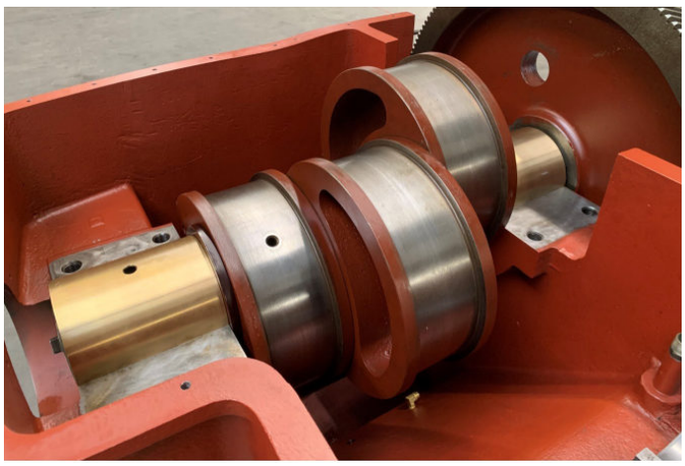
Frame Blasting & Repainting
The base frame is externally sandblasted and repainted to ensure long-lasting corrosion protection.

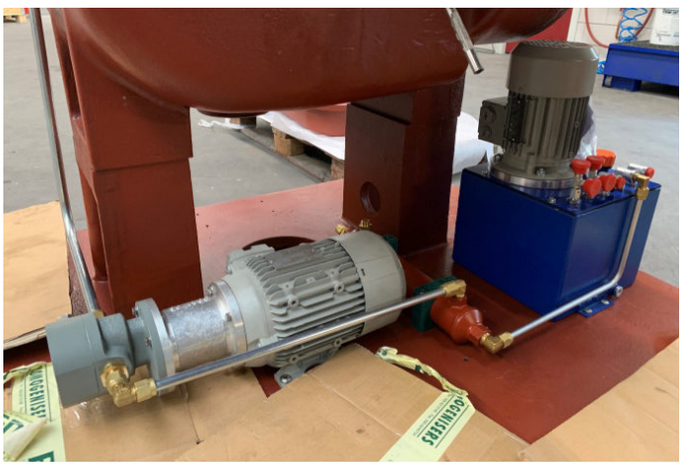


Reassembly Begins
Upon return, reassembly starts with the installation of the eccentric, gearwheel, and gear reduction wheel. All bearings, seals, and gaskets are fully renewed using new, high-quality components.

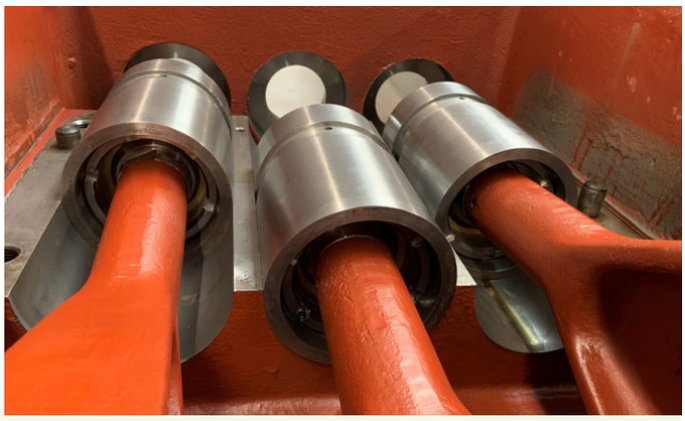






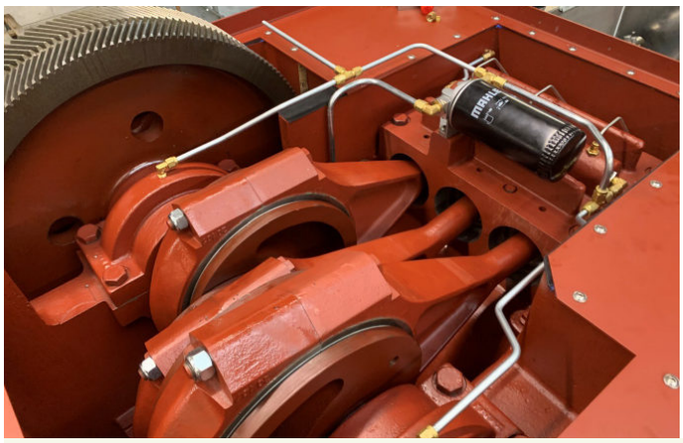


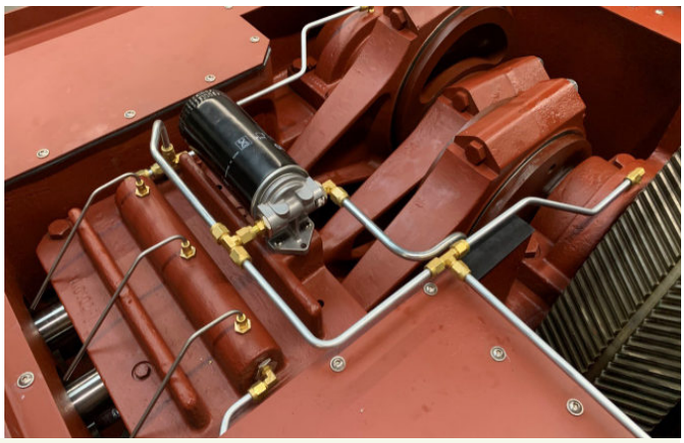




Crosshead Installation

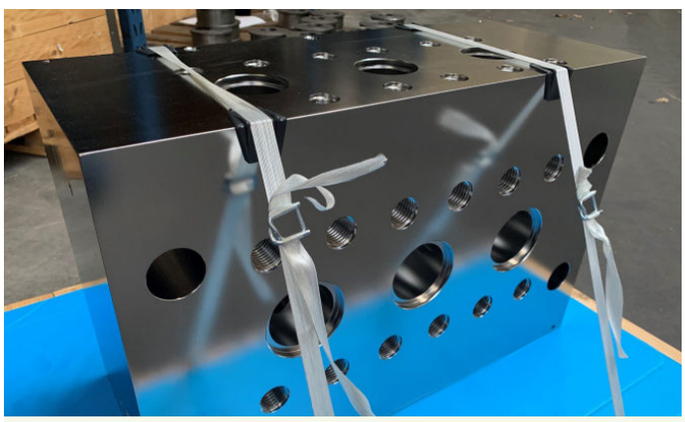
Crossheads are mounted into the reconditioned bores. In cases where bores are oversized, matching oversized crossheads are installed.

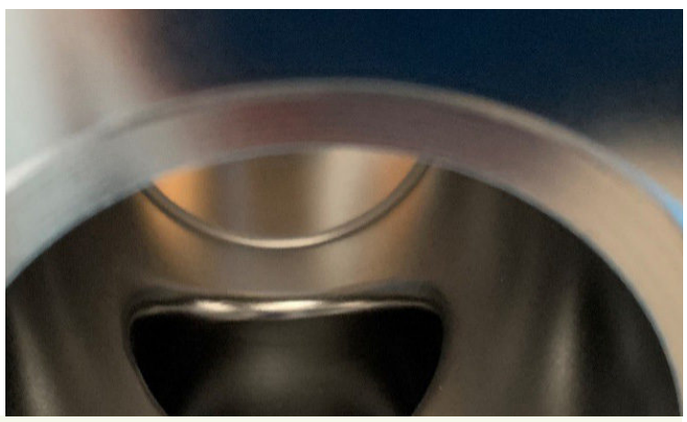




New Oil Lubrication Piping

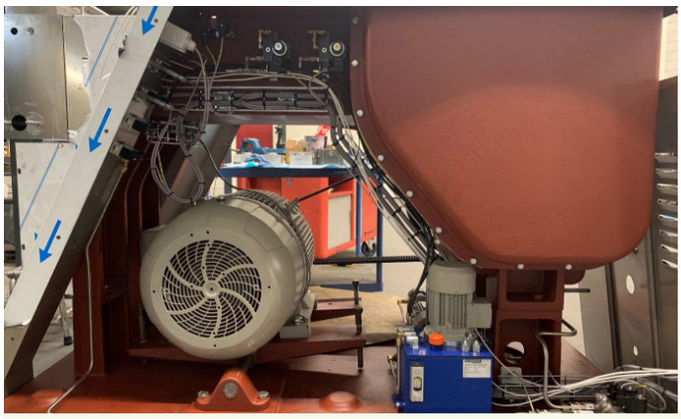
All lubrication lines are replaced with new piping to ensure reliable oil distribution.

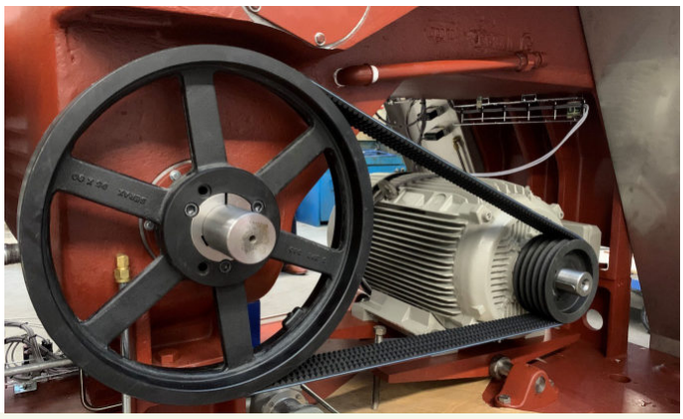




Cylinder Block Replacement or Upgrade

BOS Homogenisers has in-house capabilities to manufacture new cylinder blocks and holds a large inventory of used blocks. The choice depends on customer needs and agreed specifications.





Motor & Hydraulic System Replacement

All motors, including the oil pump, are replaced with new components. If the machine uses hydraulic actuation, a completely new HVA unit is installed.





Optional Upgrades – Modernization

Customers have the option to integrate the latest developments from our MG machine line into the refurbished (now as-new) MC machine — including features like an advanced safety valve or a modern HMI screen with PLC control.





Connecting the machine

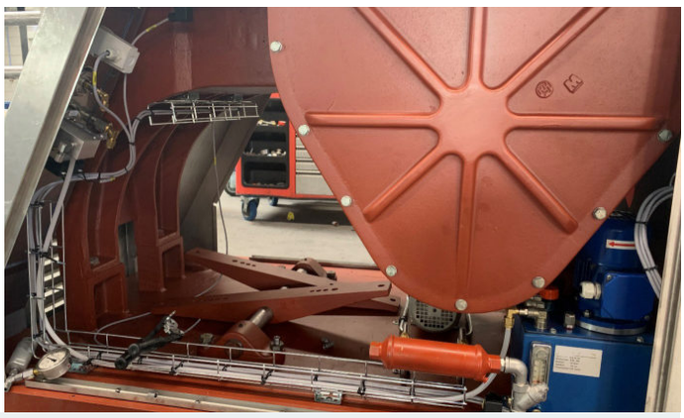
All our machines are equipped with easy connections for cooling water.

Testing & Final Inspection

The fully rebuilt machine undergoes a comprehensive test run to ensure flawless

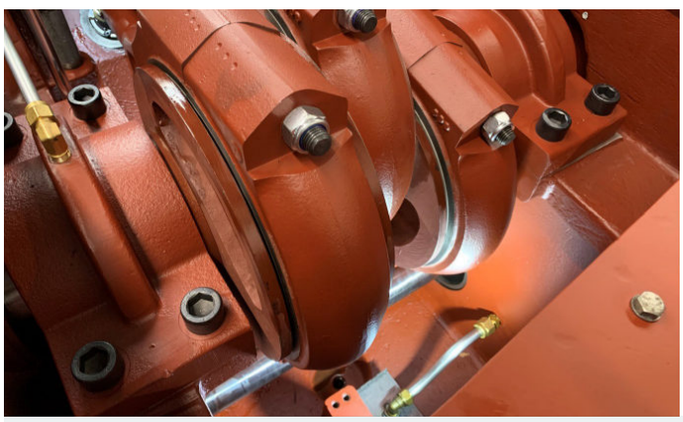
Refurbished: MC18-10TBS





Frame Blasting & Repainting

As always, the refurbishment process begins with cleaning, sandblasting, and re-painting the base frame.

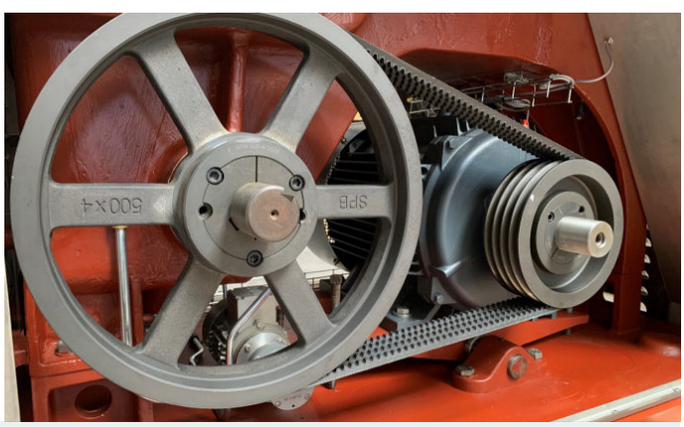




Reassembly Begins

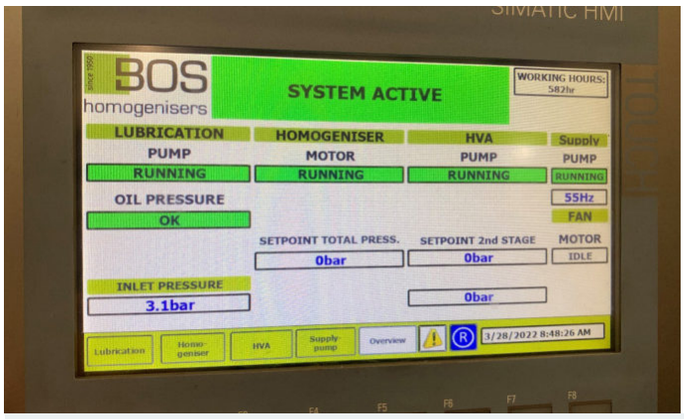
Re-assembly of the machine has started, including the installation of new bearings in the drive compartment, as well as a new oil pump and cooler.

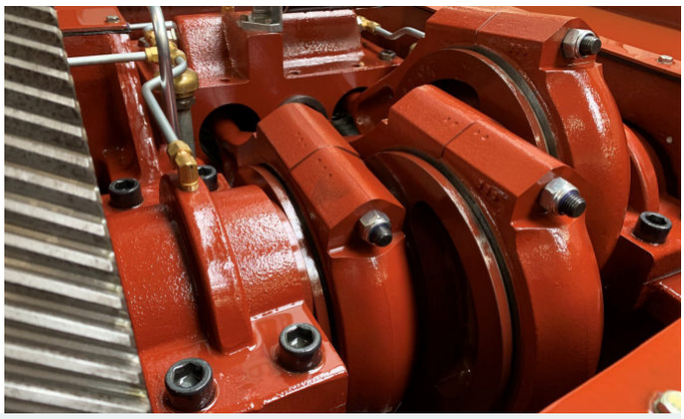




All new electrical components are installed

Depending on the chosen options, the machine is equipped with a cabinet where all additional features are connected. This makes it easy to integrate with the existing power and signal supply.





Optional Upgrades – Modernization

Even machines that are more than 40 years old can be upgraded with the latest features, such as an HMI screen and PLC, in line with modern standards.

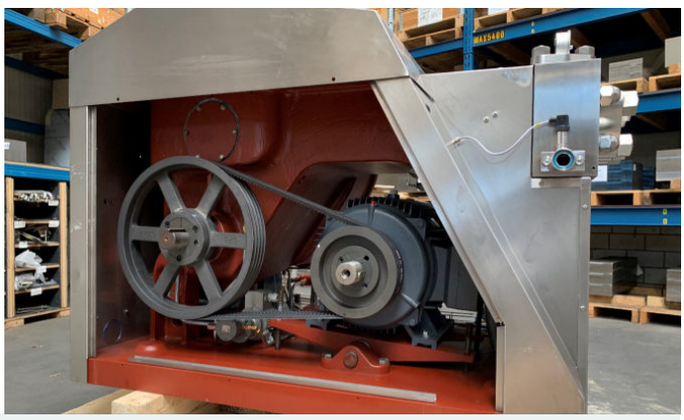




Built following customers speciation

Custom-built solutions for specific applications are not only possible for our own machines but can also be included in our refurbishment program.





Almost ready for shipment

After successful testing, the machine is prepared for shipment.



Labeling and stickers

During refurbishment, the machine is equipped with all the necessary modern safety features to meet current safety requirements.

Identification of the machine and spare parts

All key components are labeled, and the machine is provided with an identification plate to ensure quick access to the correct data.







Packaging, Delivery & Warranty

After successful testing, the machine is packaged and prepared for shipment. Each refurbished unit is ready for a second — or even third — operational life. We provide a minimum **1-year factory warranty** and supply **updated documentation**, including spare parts lists and recommended service intervals.





Review of the Refurbished Gaulin machines from BOS

"BOS is a great company due to their fast responsiveness and delivery time of service and parts, being these points one of the reasons of their/our success. Also their robust, durable and low maintenance machines, which are getting well-known in many factories around the world."

Ricardo Velarde Luque, CEO and owner of Image S. L. in Spain



since 1950 BOS homogenisers

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